

Weekly Report

Period: 05/20/2013 – 05/26/2013

Projects

This week, climate-vis team has been focusing on the code optimizations including iso-surface generation, streamline creation, and color-mapping for wind field. In addition, we summarized the achievements we obtain by now in the review document for CHINA METEOROLOGICAL ADMINISTRATION.

Research

More specifically, I was working on the literature search and study of Gaussian Process Regression (GPR) [1,2,3], which will be employed in my DTI parameter study project. In detail, the fiber tracking parameter space will be statistically sampled. And the sample parameter vectors are visualized with a hyper-slice representation for a specific DTI fiber feature e.g. average fiber length. To predict the unknown values according to the samples, we choose to adopt the GPR model. The same concept will be adapted to the business dataset. However, more attentions have to be paid on the distributional difference for each sample parameter vector.

In addition, I figured out the I/O library for reading and writing nrrd files which is a very popular DTI data format. Because, all datasets from [NAMIC](http://insight-journal.org/midas/collection/view/190)(<http://insight-journal.org/midas/collection/view/190>) I currently possess are in this format.

Work to be done in next week

- Finish the two proposed patent applications
- Set up the coding environment for DTI parameter study project

Reference:

- [1] Gaussian Processes for Regression: A Quick Introduction
- [2] Gaussian Processes for Machine Learning
- [3] On the Interpolation of Data with Normally Distributed Uncertainty for Visualization